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With The Editor

Raw Foods

THE organic gardener can secure greater advantages out of his compost grown vegetables if he will consume as many of them as he can in a raw state. It is an elementary fact in nutrition that cooking destroys some of the valuable ingredients of foods. It is not necessary to become a raw food faddist, but if you will experiment you will be delighted in the treat that is in store for you in the delicious taste of certain vegetables that you never conceived of eating in anything but a cooked state.

No animal eats cooked food. Man is the only creature that does and he lives only to between two and three times his span of maturity. In general animals live to between six to ten times such a period. It is a known fact that cats thrive much better when fed on raw rather than cooked meat. Man, of course, is not an animal, fortunately, but he can materially benefit from observing and interpreting some of the ways of these outdoor creatures.

One of my first experiences with raw vegetables was with peas. It is ridiculous to cook them. They are so easy to take raw and any child will agree that in cooking, something is lost. When you eat them raw you get everything. Don't overlook the fact that peas are seeds. They are living things and will grow if placed in the soil. When you cook them that living quality is destroyed. Its germinating power is annihilated. You are then eating a dead food. It is ironic to see people eating cooked peas, followed by the taking of vitamin pills. The vitamins are in the peas. Cooking destroys part of them.

Another terrible blunder is to cook carrots. It is absolutely unforgivable. Cooking not only dissipates valuable nutritional qualities but it vitiates the taste of this wonderful vegetable. Then sugar is added to give it flavor. My next encounter was with cauliflower and when you raise it without chemical fertilizers and eat it raw you get a glimpse into a new world of taste. When you cook it, you then usually add a cream sauce of some kind to bring back the taste which you sold down the river. And so on it goes—cabbage, beets, kohlrabi, turnips and many other vegetables lend themselves wonderfully to being eaten raw.

I would say that my greatest surprise came this season when I experimentally tasted some raw sweet corn just off the stalk. It was so sweet and full of milk that it was a most delightful gustatory experience. That is the way I have been eating my corn since. Why waste the time cooking it, when you can get it fresh off the plant.

Older corn usually loses its taste when eaten raw.

Another thing about eating corn, whether raw or cooked, is that it exercises the front teeth. Most foods are usually eaten on the right or left side. The exercise of the teeth is an extremely important factor in maintaining their health.

While on this subject let us wander a bit from the field of vegetables. Let us consider eggs. This product of the hen in reality is a seed. It is alive and will produce a living thing. When you boil or fry it you destroy its living powers. If you want to get the most out of the egg from a nutritional standpoint, beat it up thoroughly in milk in a raw state and take it as an egg-nog. You then conserve all its living essentials. If you beat it up well you will find it not difficult to take. If necessary you can add a pinch of vanilla for taste. In this digression let me also include pasteurized milk, which is milk that has been "cooked." In this process something occurs to the calcium which makes it less absorbable by the body and there is a reduction in its vitamin content. If you live close to a dairy and can inspect their "plant" to be sure that things are run on a hygienic basis you are better off to get their raw milk. If you live in a large city you have to be protected by having your milk pasteurized.

A very graphic illustration of the health-giving value of raw foods came out of the bleak wastes of Labrador many years ago when a famine ravaged that land. A famous English doctor who traveled there found a family in which both parents had died of starvation while a three year old child had survived. It seems that the family kept till the very last a few chickens to furnish eggs, and they lived right in the house with the people.

The mother peeled the potatoes, throwing the peelings to the chickens. The child crawling on the floor among the chickens ate these raw peelings and thus was enabled to keep alive. The parents who ate only the inside portion of the potatoes died. The child not only secured the minerals that were in the skin, but benefited by absorbing the living element in this food, which was not cooked out of it. I would like to suggest that those who always peel their potatoes and throw away the skins, make a separate cooked dish of the latter, adding perhaps some onions or other adjuncts of the cook's arsenal of cookery. Let me know how it tastes. We haven't tried it yet ourselves.

Some time ago I met a man who related a case of an old country woman who advised the eating of raw potatoes for the curing of eczema and other skin eruptions. He said that it worked miraculously in one case he knew of. I related this to one of the girls on our office force who had a severe case of eczema since a child. She was spending as much as $25 in one week for vitamin preparations which seemed to give her some relief. She discontinued the vitamins and after a few weeks on the raw potato diet she obtained even better relief and she has been taking them ever since. It has not effected a complete cure but her face shows a remarkable change. She eats one raw potato a day.

In reading a health magazine recently I noticed a statement by an M. D. that "some so-called excellent foods pass through the entire alimentary canal unassailed. Cooked beets is one of these." After eating cooked beets, the red color will invariably show up in the stool,

indicating that it was not absorbed in the digestive system. You will find that eating the beets raw will eliminate this red, or show it up in a reduced amount. There is no question that cooking has a powerful effect on the food quality. Take the case of wine. Cook it and you then cannot get drunk on it. It has killed its potency.

It is known that cooking destroys some of the vitamins. In the case of vitaminB, it may be up to about 35% of loss. With reference to vitamin C the loss may range from 10 to about 90%. The addition of soda to the cooking of vegetables is an extremely foolish practice. It practically doubles the rate of loss of vitamin B. Soda is usually added to preserve the green color of peas and beans.

It is interesting to note the conflicting theories held by the medical profession regarding the pros and cons of cooked foods. G. A. Sutherland, M. D. in "A System of Diet and Dietetics" (1925) says:

"The chief effect of cooking on vegetable food is to cause the starch granules to swell up and rupture the non-digestible cellulose chambers in which they, as well as the protein and fats, are contained. It is for this reason, and also because starch is more digestible cooked than raw, that cooking greatly adds to the digestibility of all vegetable substances containing an abundance of cellulose, while at the same time it relieves the organs of mastication of much of their work."

On the other side of the fence is the famous Dr. John H. Kellog who in "The New Dietetics" (1927) says:

"Another advantage of the raw food-diet which may, perhaps, be one of its chief merits is the fact that it supplies to the colon a considerable amount of raw starch which, being digested and converted into dextrin and sugar by the unused ferments always present in the feces, furnishes the kind of nutriment necessary to encourage the growth in the colon of acid-forming or fermentative bacteria, thus combating putrefaction and encouraging normal bowel action. . . . . The art of cookery has been used not only to render food more digestible, but more often to lessen its digestibility and to transform the simple, wholesome products of Nature into noxious, disease-producing mixtures."

Some persons cook practically everything they eat, including apples, pears and even bananas. Perhaps some who have delicate stomachs may have to do so, and in individual cases it is advisable to get the benefit of your physician's advice. On the other hand it is good to have some warm stuff at every meal. We do not advise the adaption of a 100% raw food diet. Sheep, horses and cows are better adapted to it.

An advantage of raw food is graphically described by the famous Dr. Henry Sherman of Columbia University who says, in "Food and Health" (1941):

"Fruits and many vegetables also have an important relation to the maintenance of good conditions in the intestine. This is largely because of the bulk which they impart to the residues, thus giving the muscular mechanism of the intestine a chance to be effective in keeping the residual mass moving and ensuring its elimination without undue delay, the fiber of these foods also serving to give the digestive apparatus *its daily scrubbing.*"

Raw foods are much more effective than cooked in acting as a cleansing agent of the digestive

tract. It is a question as to what our modern diet will eventually do to our bodies, in the evolutionary process extending over a few thousand years. Eventually we may lose our teeth and become a second rate thinking entity.

Here is another aspect of this subject that may prove a disappointment to many of my readers. It is the general idea that one should save and partake of the cooking waters, which many used to throw away, that these waters contain the best mineral elements in the vegetables. You will think differently, I am sure, when you read the following excerpt from "Bio-Dynamic Farming and Gardening," by Dr. Ehrenfried Pfeiffer:

"That an overbalance of salts, in the case of mineral fertilizing, can have a harmful effect on the food, has been shown from various studies. Reference has already been been made to the observations of the Swiss researcher, Dr. V. Grunigen. They point to the danger of a too high potassium content; this comes from the tendency of the plant to consume an over-abundance of potassium. The data of Professor Rost of Mannheim go further in presenting the danger of a surplus of potassium. Rost demonstrated by feeding experiments that, through the feeding of potassium, thrombosis as well as gangrenes could be experimentally produced. From this noteworthy treatise the following is cited:

. . . . But now I made, in connection with the potassium-nitrate fed animals, an observation which is extraordinarily interesting, for they showed a tendency, a pronounced inclination in the successive generations toward thrombosis. Obviously these phenomena appeared more pronounced in the second generation than in the mother animals. Rost testifies that in recent years, thrombosis has increased also in the human being up to four times its earlier prevalence, and he comes to the following conclusions:

. . . . .The potassium content of plants may be considerably increased by potassium fertilizing. . . . In cooking, the chief part of it goes over into the water. Using the figures given in Konig's *Chemie der Nahrungs- und Genussmittel* one can reckon that, for example, with spinach, about two thirds of the mineral substances go over into the cooking water and are poured out with it. But lately there is a strong tendency not to pour off this cooking water as was formerly the case, but to utilize it, because these mineral substances are considered something especially important for human nourishment. Without doubt we absorb considerably more potassium salts with this modern way of cooking than formerly, to which must be added the fact that, thanks to the plentiful use of artificial fertilizing, the potassium content of the plant is higher than in earlier decades. I may, perhaps, interject here, that this modern way of cooking by no means agrees with everyone's digestion. I know many otherwise completely healthy people who are affected with nausea and severe diarrhoea as the result of partaking of vegetables prepared in which the cooking water was retained, and it is further known that the "Pollakisuria" which was so often observed during the World War, was mostly a "Polyuria" resulting from potassium salts."

In conclusion let me say that the gardener who has spent so much time producing food is entitled to use it to its best advantage and the evidence seems to weigh in favor of its consumption in a raw state.

J. I. RODALE.

Nutrition And Health

By SIR ALBERT HOWARD, C. I. E., M. A.

IF we look at the history of England with a fresh eye and consider it from the point of view of soil fertility, some interesting facts emerge which, I think, bear not only on the origin, but also on the prevention, of disease.

The governing event in the history of our country is the Saxon Conquest. England made a fresh start; an agricultural unit—the manor—was slowly developed which, for purposes of taxation, was later on transformed by the Normans into a rigid feudal system. The main features of manorial farming were two: (1) the open-field strip method of tillage which always included the fallow, and (2) the use of the heavy soil-inverting plough drawn by several pairs of oxen. The Saxons started with a fertile surface soil containing abundant supplies of humus left by the recently cleared forest, and with a sub-soil which had been broken up in all directions by the roots of the trees. The mould board plough enabled them to convert these reserves into wheat and other grains. To maintain the yield, however, it would have been necessary to replenish the supply of humus and to restore from time to time the aeration of the lower layers of soil. But both of these essentials were neglected. The volume of manure was small, because there were no root crops for wintering the live stock, large numbers of which had to be slaughtered and salted down every autumn; what supplies were available had to be applied in large part to the lord's demesne: the open fields were never grassed down, when they could have had a rest and built up stocks of humus under the turf. An effective system of sub-soil drainage did not exist: the sub-soiler had not been invented. The inevitable consequence was the slow wearing out of the surface soil as the gap between the fertility used up and that restored widened, and as the permeability of the sub-soil was gradually lost. The result was, the yield of crops like wheat slowly fell. Some time before the Black Death the old records show that it had reached some six bushels to the acre. That these diminishing yields were accompanied by a deterioration in the quality of the grain is suggested by the frequent outbreaks of rural unrest and by the growing toll of disease in crops, live stock, and mankind. Under a cast-iron regime like the Feudal System and a method of farming which allowed no latitude, the innovator and the experimentalist were automatically deprived of that freedom essential for progress to take place. Stagnation was the inevitable result.

Where mankind failed, Nature, in 1348-49 and succeeding years, provided a remedy in the shape of the Black Death which, by destroying two-thirds of the rural population, accelerated the decay of the manorial system and stimulated the enclosure movement. The worn-out arable was laid down to grass to nourish the flocks of sheep whose wool was in such great demand in Flanders and Italy. Under grass the land slowly recovered, and after

a century or so had accumulated sufficient humus under the turf, so that the yield of wheat increased to eighteen bushels to the acre, or even more when these rested areas once again came under the plough. Epidemic disease at the same time diminished in intensity and tended to be restricted to the towns. The slow restoration of soil fertility which took place after the Black Death was followed by some interesting developments in the intellectual domain, as is shown by the achievements of the Tudor period. The restoration of the fertility of the open fields of the manors produced in due course some outstanding men and women—the soil's most important crop.

The restoration of fertility continued after Tudor times till the Great Depression of 1879. During this period British farming produced many notable pioneers, including Robert Bakewell, Coke of Norfolk, and Turnip Townshend, whose labours were embodied in the Norfolk four-course system, by which the fertility of the soils of this island reached their highest level.

But while the Black Death helped to restore our agriculture, it also sowed the seeds of a calamity which, although slow and insidious in its manifestations, is likely to prove one of our greatest afflictions. The dispossessed craftsmen maintained formerly by the manors lost their employment and were driven to the towns, where they began to start industries which, in the course of years, became an avalanche in the shape of the Industrial Revolution. The workers of the growing factories had to be fed: their machines needed more and more raw materials: the strain on the land increased. All this development was purely parasitic. The land fed the towns, but the towns did little or nothing to return their wastes to the soil which nourished them. Eventually the land was unable to meet the urban demands and a gap was developed, which was met by the importation of food and raw materials from overseas. Prices fell and the farmers were hard put to it to survive. Science was then called in to stimulate production and the artificial manure industry was born, which has now grown into a vast and powerful cartel-like organisation and is now linked up with the production of poison sprays to protect the crops, and every kind of dope to assist live stock and mankind to escape the consequences of a malnutrition which need never have developed. While all this was in progress, the virgin lands of the New World and elsewhere, which produced our cheap food, were being one after another worn out and converted into dust bowls. The Industrial Revolution became a boomerang.

The response of Mother Earth to all this exploitation is disease. As the fertility of the soil is worn out and as humus is replaced by artificials, the power of the crop to reproduce itself and to withstand the inroads of pests soon falls. This weakness is duly passed on to the live stock and to ourselves. The stage is therefore being set for another visitation of the Black Death type.

If the above is a true picture of events, detailed evidence must be available in support. In a book now in the press, entitled "Farming and Gardening for Health or Disease," I have endeavoured to set out this evidence and to point the road out of the abyss.

If a connection exists between the condition of the soil, the be-

haviour of crops and live stock, and the welfare of mankind, surely there must be some principle running through the whole cycle which furnishes a simple explanation of the facts. Such a thread appears to exist. It is, I think, to be found in the condition of the proteins which everywhere are the regulators of infection. If anything untoward happens to the proteins, either in the way they are synthesised or as a result of extreme climatic conditions, then we must expect disease. It would naturally follow from this that there is only one basic disease in the world which, however, will manifest itself in many different ways according to circumstances. It seems so. We can prevent much of this disease by seeing to it that our soils are fertile. Other groups of disease caused by the disruptive effect on the proteins of extreme climatic conditions cannot always be controlled.

It would follow, therefore, that there will always be some disease, however fertile the soil may be. All we can do is to reduce it at the source by the faithful adoption of Nature's law of return. This, in brief, is the view of one of our pioneers in medical research—Mr. J. E. R. McDonagh. My own experience of disease, which covers a period of nearly fifty years spent in research all over the world, supports Mr. McDonagh's thesis.

Has all this been confirmed? It has. Case after case has been reported where the adoption of the law of return has been followed by an almost instant response in the shape of disease resistance in crops, animals, and mankind. The world unfortunately also supplies many examples of the harm which results from the replacement of humus by the manure bag.

In the interpretation of Nature's verdict between crops grown by organic and inorganic methods two important agents, hitherto unused, are doing yeoman service. The instinct of our live stock can instantly distinguish quality in their food: the lowly earthworm is turning out to be the perfect soil analyst.

Naturally the work in progress all over the world on the restoration and maintenance of soil fertility by means of organic farming and gardening has disturbed the artificial manure interests and their supporters. What has been described as the war in the soil has broken out and is now in full swing. The first pitched battle has just ended in South Africa. Artificials have taken the count: the Government of the Union and most of the farmers have become compost-minded. Even in this expert-ridden island of Great Britain, where the statistical elaboration of the obvious is considered to be an essential preliminary for action, progress is being made. But most of the pioneers are to be found in the new countries.

Sir Albert Howard Compost

"MY FIRST Indore Process compost pile, now *seven weeks old and practically finished,* developed better than I expected. Contents about one ton. It was built of dry weeds, old chicken litter, and soil from the barn floor. It is located on dirt floor of basement barn."

C. E. Eddy, Thompsonville, Conn.

Residues And Composting

By JOSEPH A. GOLDING

SEVERAL years ago, I heard of a man who was said to have cured his diabetes without insulin. He reasoned like this: If my glands cannot properly utilize sugar, I shall educate them to it by gradual intakes of corn syrup, honey, and other sweet materials rather than accept my present system and supply insulin. Somehow, this idea lingered in my mind when my stocks, a flower I like for its beauty as much as for its fragrance, were attacked by bacterial rot. I read up on the matter and found that the seeds can be given a hot water treatment but I decided to educate my stocks to resist. Instead of burning the dead and diseased plants, I put them in my compost pile. At that time, I was not fully aware of the high temperatures reached in a properly made compost heap, and I am sure my heap was not as good as it is now when I follow the Howard method. But I know that the diseased plants did not affect my soil adversely and that stocks grew well afterward.

Recently there came to my attention Bulletin 434 of the Maine Agricultural Experiment Station in Orono: *Treatment of Potato Refuse Piles to Prevent Spread of Late Blight* by G. P. Steinbauer. The blight organism can produce enormous numbers of spores so that a small refuse pile can result in a great many infections. Steinbauer advises various means of killing these sources of future bad crops, especially spraying, deep burial, and burning. A general statement would undoubtedly be framed like this: "When you have diseased plants, burn them." From this it would appear that these organisms of bacterial or fungus type causing plant diseases are killed by heat.

This explains to me why burning is not necessary, why a compost pile which is allowed to heat properly destroys the causes of disease. Of course, a heap should be built in one effort so that it can heat up. If you throw a bunch of plant refuse on your heap now and then, you will get decay in time, but not the proper development of heat which destroys disease-bearing lower plants as well as weed seeds. This can only be achieved in a properly constructed and well aerated pile.

How sound this principle is appears from the methods advocated for greenhouse and field conditions: The experimenters often advise the use of steam. By the time the steam hits the ground at the depth where such bacteria and fungi survive, its temperature is about the same, if not less, than the temperature in the compost pile.

Another interesting item appears in Waksman's *Principles of Soil Microbiology* (1932) on p. 737 on the use of straw as fertilizer. He reports that straw causes a temporary storage of soil nitrogen needed for the decay of the straw! The nitrogen goes into fungi and actinomycetes. This would indicate that a straw mulch, which naturally decays at the bottom, would have a good effect on the health of plants insofar as bacterial diseases are concerned.

Sir Albert Howard adverts re-

peatedly to this question. One time, he wrote about a tomato grower who had a large commercial farm; he used all the diseased old stalks when he changed over to compost, rather courageously, but successfully: His plants did well. In another place, Howard said: "Perhaps the easiest way of demonstrating the claims of humus is to start a bed of strawberries or raspberries from the most virus-infected and otherwise diseased plant material it is possible to find. When this diseased stock is planted in freshly prepared humus, a remarkable change takes place. Most of the plants recover and throw off the disease; fruit of the highest quality soon results." And again the same is said about Captain Wilson's enterprise which followed the Howard method. We reported about it in March 1945, and again it was seen that diseases are not spread through the compost heap.

In conclusion, I should think that composting diseased plants and using mulches would prove as advantageous on the farm scale as it has in the garden. Besides, if the soil is properly fed, no one organism will be able to expand its domain at the expense of other soil microbes. When a disease appears, this is not a sign that we should doctor the soil, but that we should heal it by helping it to restore its balanced life. I have found this practical and I am glad that Organic Gardening has given me good reasons for finding it also wise in principle. Diseases indicate a diseased condition. But a diseased condition cannot be overcome by medicines, only by recovering health. This is what the organic method does.

Compost Works With Flowers

"WE HAVE AGAIN some fine compost heaps nearly ready to spread and others newly made. We left off all commercial fertilizers and *our dahlias are finer and further along* than they have ever been. Thanks to your magazine."

B. M. Scott, Cottage Grove Dahlia Gardens,
Cincinnati, Ohio.

Compost Does It . . .

"WE OWN and operate a truck garden in what is surely the county with the poorest soil in the state of Washington. We have built up an amazing clientele for our vegetables—and it has taken us *ten years to build our soil* to the state of fertility necessary. This we have accomplished with compost."

W. H. Hennis, Bremerton, Wash.

Hints For The Victory Gardener

This is the thirty-fifth of a series of articles by this author dealing with the cultivation of ordinary vegetables.

THE MUNG BEAN

By ROGER W. SMITH

EVERY season the observant gardener usually sees, or hears about, some curious flower or vegetable. The Mung bean is a strange garden character. Perhaps you'll wish to grow it just to make its acquaintance, but first let's get an idea of its nature and habit of growth.

Phaseolus mungo, the mung bean, is a hairy, spreading annual between two and three feet in height. Its leaves are oval, sharp-pointed, about three inches long. It bears yellow flowers about one-quarter of an inch in length which in turn give way to cylindrical pods. These pods are about two inches long and covered with long hairs. They have short, hooked beaks. The plant possesses a sort of rugged ugliness.

The mung bean is native to China where its black seeds, each with a white spot, are an important article of food. It is equally important in India where it is called the "black gram", and it is well known in the Philippines.

As you might suspect, since it is cultivated so extensively in the Orient, the mung bean is found in several varieties. *Phaseolus aureus,* another type of mung bean is known as the "green" or "golden gram". It closely resembles the black mung bean but the seeds are not usually so black, the hairy pods are shorter and the plant taller.

In Greece the golden mung is esteemed as a delicacy, but in that country its seeds ar not much larger than grains of rice. Nevertheless, it forms an important part of the Greek national dish "pilaff".

The Chinese introduced the mung bean to America in the form of bean sprouts in chop suey and the like, and you will sometimes find mung beans listed in your garden catalog as "Chinese Salad Beans" or "Chinese Sprouting Beans".

One pint of seed beans should be sufficient for one hundred feet of row. The seed should not be planted deeper than one quarter of an inch, and the seedlings of most varieties of mungs should be thinned to stand about two feet apart in the row. Because of the spreading nature of the plant, the rows should be about three feet apart.

The mung bean prefers summer weather provided there is ample late summer rainfall. From this you will know that the seed should be sown about the same time you plant your tender vegetables.

Although the mung bean is a rugged growing plant it will not thrive during the summer heat unless the soil upon which it grows contains sufficient organic humus to supply the necessary amount of plant nutrients and to retain suffi-

cient soil moisture to make these readily available. But you should have little difficulty in growing mung beans if you dig in a couple of inches of mature compost or well rotted manure over the area where the plants are to stand.

To increase your chances of an even stand of plants, the seed should be soaked in compost water over night and if you doubt its viability it might be best to sprout it in a shallow container, and plant the sprouted seed. Also, if you are using ground in which legumes of some kind have not been grown before, you can increase your chances of successful germination by mixing the seed with a little sifted top soil taken from the spot where the limas grew last season and sowing the mixture.

Mung beans seem little affected by plant disease or insect pests. They have been grown in a small way in many sections of the country as a fodder crop without much trouble for about one hundred years.

Since the war cut off shipments of mung beans from the Orient, American farmers have been planting them rather extensively especially in Oklahoma, finding a ready market for them in the Chinese-American restaurant trade. In some areas the mung bean crop is reported to have grossed almost as much as the winter wheat crop which it followed.

Undoubtedly the mung bean is an important article of food in the Orient perhaps equal to the soy. But unlike the soy its peculiar flavor has long been used to add distinction to the dishes of many lands.

You may not like the flavor of mung beans, you may even be repelled by the strange, hairy appearance of the plant, but in the growing of it you will have met up with a rather interesting garden character.

The Victory Gardener's wife will be pleased with the smallness of the beans and their exceptional cooking quality. These beans are much smaller than peas and are cooked very quickly.

Making Converts

"GETTING PEOPLE interested in the organic way is not easy. But my neighbor, Mr. Kerenoff, is making converts when he sells fruit trees. *He is completely sold on compost.* A friend of mine at the army camp is bringing soldiers out to my farm. They say they intend to own a small piece of land after the war. So we are spreading the idea also."

F. L. Suttles, Greensboro, N. C.

Secrets of Seeds

By HEINRICH MEYER

THIS morning a reader wanted a bit of information about a certain kind of Chinese cabbage and we wrote him about the various sources and varieties in the market. A few days ago we told some other reader that all sunflower seeds were free of chemicals and that he could eat the seeds as bought from the seed store. Often we have requests for sources of "organically grown" seed, in whose production no chemical fertilizers or sprays have been used. But to this we have no answer, for the seed business is extremely complicated and it would be impossible for the outsider to ascertain which seed is grown in one way or another. Now, at the time for fall seed buying, it may be helpful to the gardener to know where the seeds come from which he buys so abundantly at relatively low costs. For rarely can a family use up a whole packet which costs only 10 or 15 cents.

The seed business is in some respects highly specialized, yet every firm has its own tradition, often dating back three generations and more. Everyone has seen those advertisements which show some bearded gentleman of old and many have been induced by the suggestion of old traditions to order catalogues and special seed, even though the present executives of Condon Brothers or R. H. Shumway do not have the long beards of the founders. Some may recall that Mr. Wm. Atlee Burpee was a cousin of the famous Luther Burbank, but few realize that almost all the larger seed businesses have become large only because they have succeeded through generations in supplying good seed. I think, for instance, of Ferry-Morse, F. H. Woodruff and Sons (Milford, Conn.) or Robert Buist (Philadelphia, Pa.).

It is a peculiar thing how our emotions control us human beings: We like to trust, but if we have trusted and were disappointed, we will not be reconciled. One time, I ordered from a dealer a packet advertised as an unusual variety. When it came, I saw that it was a very poor strain of something generally known. I have never since ordered any seed from that firm. At another time, when I wanted to grow some poppies for seed, I visited three of the most prominent seed businesses in New York. The manager of one firm suggested that I might be trying to make opium. Apparently, he did not know that opium does not come from this kind of poppy, but the stupid suggestion irked me so much that I shall never buy any seed from that firm. Seed catalogues are just as interesting as book catalogues. You picture the person of the seedsman behind his make-up. I personally prefer the modern catalogues of Ferry-Morse, Woodruff, and Lagomarsino to the old-fashioned ones; still I cannot resist reading the advice in such books as the comprehensive one by De Giorgi Brothers (Council Bluffs, Iowa). I think P. L. Rohrer (Smoketown, Pa.) puts out a fine catalogue, and there are many firms which succeed in impressing our eye the way Stumpp and Walter (New York) or the Hallawell Seed

Co. (San Francisco) does. In the end, however, I rely less on the catalogue than on known performance. Dealers who have supplied good seed, as most of them have, dealers whose shops and salesmen I like, dealers who give me more than my money's worth in well-filled packages of seed that grow, are the ones to which I always come back. But good seed and an attractive or interesting catalogue may well go together, though I confess to being most impressed by the richness of stock. At times, I have wondered why dealers do not more capitalize on government recommendations publicized in numerous free pamphlets; they never do and I am impressed by their self-reliance. For seed buying is a matter of confidence: You want to be sure that your seed grows.

As a rule, the field seed and grass seed business is a special enterprise highly regulated by law; it deals in carload lots; except for some plants, like hybrid corn, these seeds are bought from the farmers, cleaned, and resold, just as if it were grain for the mills. For it would be impossible to grow enough alfalfa seed on special plots for future seedings. While there are also definite contracts between seedsmen and farmers, much of the field seed buying is a matter of personal contact and skill, since the dealer cannot force a farmer to deliver his seeds: The farmer may cut his alfalfa before seeding time and feed it to his cattle. The vegetable and flower seed business is different. Here the seedsman makes a contract with growers in different states, supplies them with the stock seed, which, as a rule, he has grown on his own plots, and supervises the progress of the crop until he gets the clean seed for recleaning, testing, and distribution.

To enumerate the larger field seed businesses would fill many pages. A great number of these firms are million-dollar concerns. Some of them have also, like Northrup, King, and Co. (Minneapolis, Minn.), other lines; this firm, for example, is next to the Ferry-Morse Seed Co. (Detroit, Mich.), the largest dealer in packaged seeds. On the other hand, many of the well-known dealers in vegetable seeds carry a certain amount of field seeds and especially grass and lawn seeds. Much of the field seed business is national in scope. The major seed firms have branch offices in various parts of the country, Woodruff, for instance, in Connecticut, Georgia, Ohio, Texas, and New York. A list of the leading vegetable and flower seed firms would be quite voluminous, though here greater variety exists. A man, like Rex Pearce (Moorestown, N. J.), may grow a good many of his unusual seeds right at home, while firms like Wm. Atlee Burpee, Ferry-Morse, F. H. Woodruff and Sons must rely in part on contract growers. Some firms do not grow all of the vegetables needed, but specialize in certain kinds and are famous for the quality of their beans, cucumbers, tomatoes or peppers. As a rule, they do only wholesale business, though some are also sellers to individual customers by mail order.

An inquiry brought us from the Ferry-Morse Seed Co. the following information about their set-up. Everyone knows their colored seed packets from the display in the grocery and department stores, from the hardware and chain stores. They employ from 1000-1200 people, some of whom, of course, are seasonal workers. They operate seed breeding stations in Michigan, California, and Idaho, and have laboratories in their Detroit and

San Francisco plants. This enables them to produce the stock seed at home. More than 95% of their seed is produced from carefully home-grown stock. Thus they can develop a strain or fix a variety and then go to a farmer and make a contract with him to do the mass production. The mother seed, as it were, is their own growth, but the mass of the seed sold to us is grown by their contract growers. Naturally, the firm supervises the latter stage too, weeding out undesirables, safeguarding the entire process, and taking the cleaned seed for recleaning, testing, and packaging. But they also grow some seed for customers themselves, for instance, cauliflower. Prior to World War II, most cauliflower seed was imported from Europe. Ferry-Morse decided that they could produce just as good or better seed at home, and, due to this planning, we had cauliflower when the imports from Europe were cut off in 1940. For other seeds of lesser demand, such as scorzonera, we still depend on Europe, and sometimes a crop fails altogether because it is too much of a specialty and not widely enough grown at home. In 1945, for instance, corn salad and water cress were not generally available.

To mention a few other well-known growers and dealers, besides Woodruff, Ferry-Morse, Burpee, Stumpp and Walter, and others already mentioned, we have firms like Vaughan's who not only have beautiful stores, but a large mail order business, with the home office in Chicago. An old firm is also Henry A Dreer (Philadelphia). There are others of equal appeal and success for long periods. We have often recommended Germain's (Los Angeles) and Aggeler and Musser (Los Angeles) as reliable dealers in their region, and similar firms in other parts of the country. But the average buyer of seeds may not know of Bodger Seeds, Ltd. (El Monte, Cal.) or Edgar F. Hurff (Swedesboro, N. J.) or Waldo Rohnert Co. (Gilroy, Cal.) because they are largely wholesalers. The flower seeds of Bodger may be sold by your local dealer under his own firm name, just as you may never know that the carrots you get in the market may be grown from seed of the Chas. H. Lilly Co. (Seattle, Wash.) or the radishes by F. Lagomarsino and Sons (Sacramento, Cal.). Pieters-Wheeler (Gilroy, Cal.) may have grown the onion seed and Hurff (Swedesboro, N. J.) your tomato seed.

There is a very large list of growers of special seeds, especially on the West coast and in the inter-mountain states, because these regions are distinguished either by a long growing season under a not too scorching sun or by other suitable conditions of equal importance: If you cannot forcast with reasonable assurance, or control with a certain degree of accuracy, the growing of seed crops, you may lose the final reward of all your costly efforts. In the Western states, the climate is reasonably dry, which prevents many fungus diseases that would befall crops under a rainy sky in the East, while the water requirements of seed crops can be controlled by irrigation; for when the clouds are relied upon, you may get too much rain and all your seed may be lost. Nevertheless, many growers maintain grounds in various regions in order to make up for crop failures in one or two of them and also in order to obtain seed grown under the proper length of day.

All the responsible seed growers have close contact with the experiment stations or the Bureau of Plant Industry; they will try out a

new variety or strain developed by government scientists and the government scientists will test commercial varieties for their suitability under given conditions. In looking over the recent Florida Bulletin 405: *Commercial Vegetable Varieties for Florida,* we found sixty different seed sources listed, of which no less than fifty were commercial growers, while only ten were government stations. This collaboration made the Victory Garden program possible. It is only natural that the seed dealers should now entertain some concern over the future. Perhaps the successful expansion of our national garden program will not continue so successfully after the war? Will people perhaps give up gardening again and buy vegetables at the stores? Especially, when frozen and flown-in products become easily available? *We are sure that one group, the group of Organic Gardeners, will increase; they know the value of home-grown vegetables, the beauty of home-grown flowers, and the incomparable satisfaction gained in the home garden.*

But how about organically grown seeds? It is not idle speculation to say that such seed would have many advantages. While the amount of nutrients in the crop is only to a very small extent supplied by the original seed, a healthy seed does nevertheless produce a healthier plant that is more resistant to attacks. True, under any system of gardening, there are pests; when the weather gets too wet, some plants are likely to rot at the roots by the action of some bacteria, and no method of soil treatment will completely change this. But the healthy plant is more able to withstand or even overcome such attacks, as has been proven and experienced by many different gardeners and experimenters. However, there are other factors that come into play. It is known that potatoes that grew in dry years and on poor soil produce better yields than potato seed that had all the advantages. This is easily understood from the following general consideration: If a plant is limited in its development, it will hurry all its reserve materials into its seed or tuber so that the continuation of its life in the next generation is secured. Thus, seed that was rushed or seed that is not fully perfect, often germinates and produces more quickly. In grain and grass seeds, many experiments have been conducted which show advantages on the side of semi-mature seeds. In other words, there are many unknown questions connected with seeds.

You can always run experiments of your own. Suppose you sowed some spinach at two different times; you leave a certain number of the plants standing for seed. Save some of the first you get and save some of the last you find. If you are careful, you may get an early and a late strain of the spinach separated. However, this is only the beginning. In order actually to obtain a spinach that grows quickly and one which does not shoot into flower stalks as soon as the weather looks like getting warmer, you will have to breed these two groups of seeds for several generations. In the end, you may come up with a new variety that the seed trade will be glad to use; but you may also have many a disappointment. Instead of getting an early and a late spinach, you may get more or less curly plants, and your wife may wonder what you are driving at when your various cripples come into the kitchen. For organically grown or not, seed has in it a great varia-

bility, and the healthier the seed the greater its variability. Also, the more specialized the conditions under which you have to do your gardening, the more selected must be the seed which you plant. Still, the field is wide open for many an experiment.

A good celeriac with smooth white roots of about 2-pound size has not yet been developed in this country, while Europe has many such strains. An American scorzonera is as unknown as a juicy American leek. Nor has a scarlet runner that produces a bean crop like the Kentucky Wonder been developed by us. There are unlimited opportunities, and chances are that under organic conditions less specialization and greater variability may be evoked. But for our standard seeds we cannot succeed on home-grown products for the same reason: Instead of getting even smooth radishes, we may get a variety of cross-pollinated specimens that are not fit to eat or even to look at, because in the small garden we cannot control conditions as they must be controlled to get proper seeds. If it were not so, the seed industry would never have come into being. Just as we do not make our own plow shares at home, because we can buy better ones more cheaply from the specialists, just so we do not grow many seeds at home, because we cannot duplicate the work of the seedsman.

Garden Calendar—October

Medium Temperate Zone: The time to keep from weeding next year: Don't allow weeds to go to seed.

Watch out for freezes, cover juicy or tender plants. Leave root crops until the first frosts. Dig trench for winter storage. Dig vegetable beds and leave them in the rough through winter so that cold can break down the soil. Dig in your compost too.

Get ready for fall rose planting. Where tender roses are covered, be sure to leave air to them. Sprinkle poisoned grains against mice around fruit trees and plants. Dig dahlia, gladiolus, begonia, canna; let them thoroughly dry and store dry. Protect against rodents. Plant tulips and hyacinths.

Plant berries, cut grapevines, dig and fertilize asparagus beds; you may still sow spinach.

Pot chrysanthemums for inside blooming, place hyacinths and Amazon lilies in light places for Christmas flowering.

The beekeeper feeds in the evenings and begins to protect his hives against robbers and freezes.

Time to plant trees, to make general improvements in and around the garden. At end of period clean endive and store it in cool airy place between clean straw.

Subtropical Zone: All early vegetables sown. Summer vegetables of the North are sown in frames. Spring-flowering bulbs are set out, flowers are sown in the open and in frames.

Old Rule: When Simon and Judas are past (28th), comes the winter's icy blast.

My Garden

By F. G. EVANS

EDITOR'S NOTE: If other readers feel like it, they may write us about their gardens. It would be fun for Organic Gardeners to become acquainted with one another all over the country, as different readers write *My Garden.*

FOR MANY YEARS, I was a city dweller who had to rely on escapist literature of a gardening nature. I wrote to all the nursery and seed firms asking for their catalogues. True, this was not a sound business proposition, but I felt morally justified: Sooner or later I would have my garden in the country; then I would order loads of seeds and nursery stock. Those seedsmen and nurseries would be amply rewarded for their beneficent catalogues. Besides, I would buy equipment. I had made a list of coldframes, sashes, tools, and even a wheelbarrow. Apart from catalogues, I ordered books and subscribed to five garden magazines. I was at first a bit discouraged. All those experts, horticulturists, garden architects, iris and rose and miniature rose specialists knew so much. So terribly much that I should never be able to master. "Give a final raking" . . . said one man, and I worried in my own mind how many rakings should be applied. "See April issue", requested an expert in discussing how seedlings should be "accustomed to light". He dwelled on the salts and shades of cheesecloth as much as another expert seemed to be imbued with innumerable spraying materials. To keep all these gardening rules in my mind before I could become a success myself seemed a hopeless and almost frightening task. Would my garden have the proper lay-out? Would it look right in winter? Would I perhaps plant tall varieties—oh, those "varieties"!—in front of small "border plants"? Why, where would be the front and the back? All these liliums and trilliums and propitious times for storing them! I decided finally that gardening expertness could never be mine. I would be an "amateur gardener". I dropped all reading, except Organic Gardening (of course). My wife wanted an orchid and the slick salesman wanted $18.00. Orchid-growing may be a fine thing, but orchid-buying is not. I got pretty much fed up on the whole business. I even became sinister and cynical, as was only natural since I did not yet have a garden myself. Also I became somewhat doubtful of the experts. All these articles sounded so much alike. Everytime you "prepared that seedbed", everytime you "firmed it down" a certain way, everytime you "drilled" or "spaced evenly", and everytime you "planted in rows". And everytime things were lovely. Usually it was a flower I had never heard of or a vegetable that had just developed a new strain. No, Sir. Not for me. . . .

Then we bought our small house and about two acres of land. There were about fifteen fruit trees. I

would have to prune them. But, thanks to the experts, I knew that the best method was first to find out how the trees would do. This was fortunate and time-saving too. I could start immediately on spading the garden. It was a piece about sixty by eighty, enough, no doubt, to raise a family of twelve, or cabbages and peas for a cannery. But there it was, without a focal point, no bench, no natural division, just a field with mallows, two gigantic rhubarbs, one clump of gooseberry and a litter of perennial hardy weeds, especially chicory, varied grasses, and some left-over onions. How easy to make the famous beds, how simple to plant the well-advertised rows between which you can cultivate with your hand tools to save labor, how obvious and enticing to the expert or amateur!

It must be confessed, my wife helped me a great deal; that piece of land should have been plowed, according to the garden books. But we had no plow and thus spaded it assiduously and with pride in our growing muscular ability. We really intended to make these wonderful long beds which the Victory Garden literature has made popular. But then we wanted to see results too. You cannot spade along an eighty foot garden, and even a sixty foot bed is a job. We found it practical to make smaller beds. First we put in a bed of carrots. We spared a little corner for chives. Next, we transplanted some gooseberry bushes across the entire garden, and we also made a bed for parsley. We had forgotten the parsley seed, and began to argue about it—a sign that we were pretty tired by then.

The next day, we made a bed for onions, and without regard for our prospective cultivating equipment, we made it a broad bed. Along its edge we quickly sowed butterhead lettuce, because we liked the name and had already sore muscles from spading. I may add that it was by far the best lettuce we grew; it remained tender, made beautiful heads and never got bitter. Some neighbor called it May King, which fitted fine too, because we had lettuce in May, though we did not have a greenhouse or even a cold frame. Then someone gave us a packet of home-grown parsnip seed. Well, we had to plant it too and

Clarkia

since it was late in the day, we did not drill it, but broadcast it. The same we did afterward with onion seed, celery and celeriac. Thus, the garden began to take on shape. We had a definite plan. But just then I noticed that I should sow "hardy annuals". The question arose: "Where?"

I remembered the experts and decided to improve on them, especially since the chives and carrots be-

gan to come up nicely—such things give you courage—nicely, I say, though I had not "firmed down" or "tamped" the soil. The spring rains had done that for me. Why separate flowers and vegetables? Why not plant them as it happens? All the beds so far held root crops or otherwise hardy plants that would remain there throughout the year or soon be eaten. We had about all the vegetables we wanted, why

Safflower

not sow poppies and cosmos and larkspur and clarkias and wallflowers and snapdragons next to them? This we did, and when my wife was not looking, I sprinkled a few of each between the onions and along the salsify bed. Mary was very much surprised when all those flowers came and I got a very high respect for the people on whom we all must rely, the seed dealers, who put out such lustily growing seeds.

Funny, though, when we were through with ten beds or so, we became ambitious and had to increase the garden that was already big enough. We wanted to cut out the invading grass and worked with a pick axe on the sods, partly to straighten out the edges, partly to obtain green matter and earth for the compost pile. We started with nothing, and had a pile over five feet high and about five feet by eight in its other dimensions when we were through spading. There were baskets full of weeds and roots, loads of cut grass, loads of sods, some old straw mulch, the undisturbed residues found in the former chicken house, a barrel-full of rabbit droppings, all of which went into the pile. It was crumbly and useable by the end of June, and our expansionism was well rewarded.

The effect of our garden was best in July. By then the transplanted gooseberries had developed into healthy big bushes loaded with piquant red berries. The rhubarbs looked almost obscenely healthy. Some onions began to form flowering stalks, most were bending down. Our poppies attracted the eye to one spot, where they grew between two tomato beds and along the edge, while the opposite border was a medley of cosmos, zinnia, nasturtium, and petunia displaying color contrasts of a very old-fashioned and natural beauty. Contrary to the expert horticulturists' demands I had not had time to transplant stock, wallflower, or anything else, except lettuce and cabbage. In fact, I had always spoken of my bed of stocks as my bed of herbs. I had completely forgotten what I had planted until they surprised me with their innumerable shapes

and colors and their wonderful evening fragrance. True, I had also interspersed some safflower, I imagined it to be a lowly herb. It was a stately flower which "made a beautiful background". On the other side, Arugala was going to seed because we did not like its flavor and yet enjoyed its appearance. Here, a vegetable had become a flower for us. And since we had such a big garden, half of which would have produced twice our needs, we did not have to tear out plants at the time of seeding; we could let them complete their life cycle naturally. I like a "dead" calendula too, for a head with seeds is in itself a beautiful thing, even if it is brown.

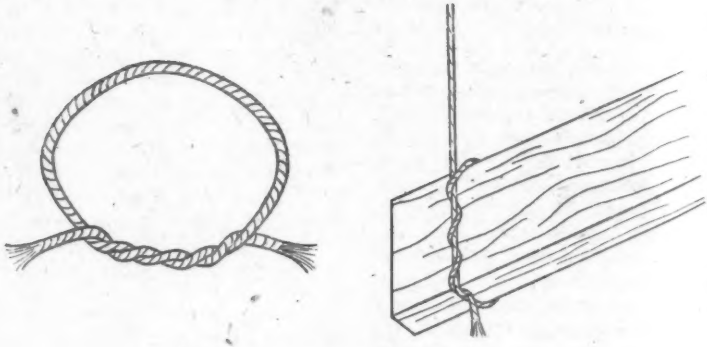
Our kohlrabis were giants, both blue and white; our cauliflower was a perfect success, no trouble at all, though the heads were a bit more purplish than white, but they grew easily. Tomatoes—we had them in great numbers. A neighbor gave us the plants and ours did well because we planted them out without shades and stakes, while his grew rank in his lean-to greenhouse and straggled along in the open in a late rainy spring when ours were already lush and green. This sounds like bragging. It *is* bragging. But was it not justified? For there never was a garden like ours in any book or magazine. It was *ours entirely*.

Next year, we will have to change the beds a bit in order to accommodate the incredibly fast-growing gooseberries. We will add a row of red raspberries and take up some space with strawberries. All of these can then stay for a while. Although we had no trouble with insect pests except some flea beetles piercing the radish and turnip leaves in their early stage and some squash bugs invading our prospective pickles, we shall acquire more flower seeds because we could not eat all of our vegetables. Why not experiment a bit? This might make it necessary to put the cosmos in a different place, though I am afraid, or perhaps hopeful, that many of them will come up where their parents enjoyed their full lives. Already the garden has its own law. True, I shall have to do some transplanting next year, because I would not throw away all the cosmos plants that I may dig up, but give them a chance somewhere else; but some will stay where they spring up. So will petunias and other flowers that seed themselves. And I am already curious how many arugala there will be next year and whether nematodes like them better than we did. You know, the experts say that you must rotate your crops. So here we are, *tending* a garden that now is there, but not imposing our will on it. We had to do much weeding by hand, but I liked it and learned a lot about weeds. It would be easier to go along with a cultivator and to get through with the garden. But I was not in it for business and efficiency, Mary and I did not *want* to get through.

If you like flowers and want a good garden, follow the advice on the seed packet. It is there that I learned when the various flowers could be sown. In the experts' books, matters always sound complicated. I am glad and Mary is too that we bought that house and got such an enormous garden plot. From the deeds it appears that it was there in 1848, and we even unearthed a little gravestone with an inscription saying that the daughter Elizabeth died, one year and seven months old, on May 17, 1848. Then the place was a farm. In all likelihood, the garden has been in the

same spot since the same time, and flowers and vegetables were grown in it for a hundred years. We have made up our minds to grow some more—at least until the year 2000. By then I would be 96 and ready to depart. But I should not care to be plucked and cut off all at once. I'd like to complete my cycle as I allow my plants to complete theirs. . . . . naturally. When a plant springs up, don't right away shout: "Away with you! I have made my plans. This is to be a straight row!" Ask yourself whether you cannot let the flower grow where she seems to want it herself. Before long you will have a garden that is yours and that your regulation-minded neighbors will secretly admire. Besides, it gives people something to talk about.

Gardening Devices



TIMBER HITCH

ON EVERY FARM and in every garden, there comes a time when some construction is going on. A log has to be moved up, boards have to be hoisted to a roof, old lumber will serve to patch holes in barns and other buildings. When there is no structure, no ready helper; when one man on his ladder has to do the job, he is often at a loss how to handle the big piece of wood. We had recently a visit by Lt. Commander MacKay who showed us the timber hitch. It is easily made and easily unmade. A man on a ladder can use it to great advantage when any other method of tying and hoisting poles or boards would be precarious and difficult.

Over the Fence

by

H. K. MEYER

Plant needs are most easily ascertained in unusual years, such as this rainy summer in our region. I had hand-sown two varieties of oats on a field that had been in corn, a neighbor drilled his oats on adjoining land that had the same previous crops and treatments. His stand came up more thickly than mine, but my oats stood up under the weather, while his lodged. Is this due solely to the density of the stand? When plants have a few square inches more to feed on, they are bound to be better fed than when they are densely drilled. I wonder if the constant decline in our yields is not perhaps partly due to the more "efficient" method of machine farming, which is less efficient from the point of view of plants and therefore successful only when weather conditions are most favorable.

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In reading over the splendid works of Mr. Savage, Senior Agronomist at the Southern Great Plains Field Station, Woodward, Oklahoma, I note in the *Sixth Semi-Annual Report* (1944) that no minerals other than salt were required for cattle feeding, because the range forage was sufficiently excellent and inclusive. In the essay on *Regrassing Methods* (1944), the organic method gets a splendid plug: The most consistently successful method in bringing cultivated lands back under grass was by the same system that Bromfield found so advantageous: Drilling suitable native grasses "in the protective stubble and hay residue left by a previous crop of cane, Sudan grass, or other sorghum". Mulches are the first step for the organic farmer.

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Rereading *Fundamentals of Soil Science* by Professor Millar and Turk at Michigan State College (John Wiley, 1943), we decided that all was not lost—there is hardly a chapter that does not emphasize the importance of Soil Structure, Soil Biology, Organics, Animal Manures, etc. It is only hoped that a number of Experiment Stations will join in a large-scale experiment on organics, by growing various crops continually on different plots, treated with raw manure *as well as with compost*, with various chemical fertilizers, and by determining how the seeds stand up under these conditions. The expectation is that seeds from composted fields will be better, produce more resistant crops, and have higher nutritional values.

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Bingham Small of Charleston, W. Va. writes a splendid aphorism on us: "Organic Gardening is 'soil feeding' as well as 'plant feeding', while the use of chemicals ignores the first, concentrates on the second and eventually ruins both."

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Cedric Morris has started his lecture tour successfully in various

cities and before different organizations of Michigan. On August 3 he lectured in the Rosdale Gardens Community House, showing his colored slides of organic farming projects, including those from our Experimental Farm.

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The Ottawa Citizen, (Ottawa, Ont., Canada) carried an item from the pen of Lt. Commander A. I. MacKay. It was the real MacKay (pronounce in good old Scotch: MacKy with a long y). The last paragraph starts: "Before we left Emmaus, we were converts to the organic cause."

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The goat and bee keepers seem to be the only group in this country which does not consistently harp on "higher yields". I am sure that stockmen like their animals too and horsebreeders are fond of theirs, but the goat and bee people know how to express their liking: They always seem to enjoy their calling with a particular zest; I believe, they love their animals! Elmer Carroll of *The Beekeeper's Magazine* thinks that DDT will not be dangerous to beekeepers. We are a bit worried. So we shall wait and see.

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The farmers are thinking of the welfare of the people, it appears from an item that recently went through the Press: New Jersey farmers got up at midnight to pick sweet corn by light so that it might reach the consumer while it was still sweet and tender. This is a good sign. It is important that Secretary of Agriculture Anderson recently requested that produce markets keep open over the weekend. For some time, the produce that reached the markets on Monday had to be gathered on Friday or before. Much was spoiled due to shortage of carriers. As the public becomes more aware of actual food values, not just average "vitamin contents", the producer will have a better chance and the dealers and middlemen will have to fall in line.

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The article by Mr. Evans mentions *Safflowers.* It may be interesting to our readers that Sir Albert Howard and his collaborator Gabrielle Howard once made a study on the oil from safflower seed, which had peculiar qualities that fitted it well for painting. Safflower seed resembles sunflower seed, and the thistly plant is quite prolific. About its possible food value, little is known as yet, though about a third of the seed is oil. The most recent publication is Claassen & Kiesselbach, *Experiments with Safflower in Western Nebraska.* (Bulletin 376, Nebraska).

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Delphinium, The Yearbook of *The American Delphinium Society,* well-known to flower lovers, came in and was highly welcomed. It is a beautifully gotten-up book for which Mr. Ohala, the Secretary-Treasurer, deserves all our compliments. The contributors have not only the highest standards of experience, but are excellent writers. It is a pleasure to read of, and to visualize, so much floral beauty.

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Since it is now time to take care of many perennials, we went over a few numbers of the *Bulletin, American Peony Society.* Reading these, I came to the conclusion that I would have to have some tree peonies. I had often admired them, but knew little about their possibilities. But the *Bulletin* gives information and valuable hints and my only sorrow is that I will never know a tenth as much of peonies as the successful and experienced

contributors to this useful periodical.

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Commercial Fertilizer carried in its November 1944 issue an article by Vincent Sauchelli on *Humus—The Working Partner of Plant Food.* The chemical industry has come to the realization that chemicals alone can never produce crops.

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"Most human and animal nutritional ills are the direct result of 'soil sickness' which comes from lack of proper plant feeding. Lack of proper plant feeding is caused by faulty fertilizer recommendations, which, in turn, stem from inadequate information in regard to soils—all of which result in vitamin deficient food." This excellent statement appears in an ad by the Chas. H. Lilly Co., well-known seedsmen.

Reader's Correspondence

Send stamped self-addressed envelope for reply.

THE SAME COMPOST

Q. Do you think it is possible to get your ground for vegetables too rich with finished compost?

Does compost apply the same to all vegetables, or is there a difference in mixture?

Fred Winkler,
Alton, Illinois.

A. The same compost is used for all vegetables because it is a balanced food and not an artificial mixture. It would be inadvisable to plant vegetables into pure compost. Only very few vegetables such as tomatoes, melons, and cucumbers would succeed.

All the other vegetables which are relatively slow-growing compared with those named should have the compost mixed with the top-soil before planting them. Some crops, like beans and egg plants, also peppers, tomatoes, potatoes, and cucumbers will take well to further top dressing applied around the time when flowers appear.

If you keep composting your garden according to plant needs, which you can easily judge by results, you will find that after a period of four or five years your garden gets in such good shape that further composting will not show immediate results. It is nevertheless digested by the soil and adds organic matter. A soil rich in humus needs, of course, less compost than a highly depleted or sandy soil.

—o—

CACTI

Q. My hobby is Cacti. I have no way of making compost. I know Cactus do not require a rich soil. But there must be something wrong. I use part soil, part sand and some crushed egg shell. All my plants were practically guaranteed to bloom but not one ever has although I have had some of them several years.

Mrs. J. J. Breslin,
Utica, N. Y.

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EMMAUS, PENNA.

A. Cactus requires an alkaline soil rich in lime. All cacti require much sun and open air and relatively little watering. In the room you must keep the window open as long as you possibly can.

—o—

SOILLESS GARDENING AGAIN

Q. Two or three years ago I was enthusiastic about hydroponics, having got a book on the subject from the library. I put some money in chemical fertilizers. I was all set to go when I received my first copy of Organic Gardening. I immediately became an Organic booster and threw away the chemicals.

What I would like to know is this: Do you have any information, or can you tell me where I can find it, to refute the claims of the disciples of hydroponics. In view of the fact that we do have proof of compost superiority over chemicals in the soil it does seem logical to assume compost superiority over hydroponics.

Joe M. Currie, Memphis, Tenn.

A. I should call your attention to the book, "Soilless Growth of Plants" by Carleton Ellis and Miller W. Swaney, in which you will find that a certain amount of organic material, usually in form of potato juice, has to be added for proper fertility. It is furthermore well known from laboratory technique that fungus cultures grown on artificial mediums do not properly thrive unless some potato juice is added.

It finally is known from the various enterprises by the army in the Pacific and other islands, that the soilless gardens which supply the army with fresh vegetables have trouble with certain crops which do not produce seed. The main point

is this: The seed used for growing hydroponic crops is grown on soil not hydroponically. There is not a single experiment going on which would indicate that hydroponically grown seed can be used. And chances are that people eating nothing but hydroponic food would develop serious deficiency diseases.

—o—

DEFICIENCIES AND COMPOST

Q. There is a basic principle involved in Organic Gardening, the process of course, which is not yet clear to me. I hope you will answer this question. In the production of organic compost all the materials used, directly or indirectly, come from impoverished soils, except possibly where sea vegetation is used in place of manure. The plants raised on our soils in their present condition are of necessity deficient in their mineral and vitamin content. When used in compost and put back into deficient soil they leave the soil still deficient. Manure from animals which feed on these plants must, for the same reason, be deficient as plant food sources. The parts of animals bodies when used as part of a compost suffer from the same cause. How then does organic fertilizing bring the soil back to a perfect condition in terms of plant food content?

G. A. Scott,
Pittsburgh, Pa.

A. Plants as well as animals are gatherers of soil minerals. The analysis of leaves shows that their mineral content is high above that of the surrounding ground. Likewise a recent article in *Soil Science*

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on earthworm castings made it plain that these are much higher in most minerals than the surrounding soil. By adding organic material and by encouraging earthworms, you usually increase the fertility accordingly. However, we suggest also the use of phosphate rock, limestone and dolomite for the purpose of adding minerals that otherwise would be lacking. But, in general, you know, of course, that compost is not only readily available plant food, but also concentrated when compared with the materials that go into the heap originally.

—o—

FRUIT DROP

Q. I have an apple tree, winter apples. The tree is healthy and is trimmed a little each year. It has plenty of apples in season, but in July they start to drop off, continuing until there are hardly any apples left. It has never been given a coat of manure, never sprayed and is about 18 or 20 years old. Can you advise me what can be done to stop the falling apples?

T. W. Crowley,
Belleville, N. J.

A. Fruit drop is almost always caused by nitrogen deficiency. Give your tree a good dressing of compost, or well rotted manure, early next spring and add some more at blossoming time. The chance is that the fruit will stay on. You can improve your chances by digging or drilling holes along the drip line of the branches and filling those holes with compost to make nutrition more quickly available for the roots. A mulch should also help, this is applied to 2 feet beyond the drip-line of the tree.

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